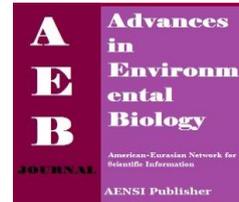




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# A Structural Equation Model of Knowledge Management for social capital

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### ABSTRACT

**Objective:** The purpose of the present study was to provide a structural equation model of knowledge management for social capital in universities. The population of the research included all employees of Islamic Azad University (IAU) in Islamic Azad University of District 2. 600 employees were selected using simple random sampling method. **Background:** The research instruments were two questionnaires which were administered in 32 IAU branches and education centers: Nahapiet and Ghoshal (1998), Social capital questionnaire which consisted of three structural dimensions (7 items), communication (7 items) and cognitive (6 items), and Cronbach Alpha of 0.84, and A questionnaire on the readiness for knowledge management establishment: **Results:** This questionnaire, which is designed by the researcher, has 5 dimensions of organizational culture (items), organizational structure (4 items), infrastructure (3 items), change support (4 items) and change content (3 items), with Cronbach Alpha of 0.85. **Conclusion:** The results of path analysis using LISREL software indicate that there is a significant relationship between the social capital and organizational culture, organizational structure, infrastructure and content factors of change, which are among the KM readiness variables. On the one hand, the results of correlation rate indicate that there is a significant difference between five factors of KM readiness. Therefore, it can be concluded that the factors related to knowledge management readiness have no identical rankings, so that the maximum one is associated with the change content and the minimum one related to the organizational structure.

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## INTRODUCTION

In the recent climate of increasing global competition, there is no doubt about the value of knowledge and learning in improving organizational competence [17]. An increasing number of firms realize that knowledge management is a key resource for competitiveness, and a resource they can create and use to achieve greater value from core competencies. In this sense, firms have become much more interested in stimulating knowledge, which is considered as the greatest asset for their decision making and strategy formulation [12]. To improve organizational performance and to compete successfully in global markets, organizations need to have effective knowledge management. [6].

Darroch [7], defined knowledge management as “the process that creates or locates knowledge and manages the sharing, dissemination, and use of knowledge within the organization” In their book entitled “Knowledge management in education”, Sallis & Jones, [20], offered a useful knowledge management self-assessment checklist with scoring elements such as

**Vision and mission:** It refers to having vision as a knowledge-based organization and sharing it with the stakeholders and the mission as the knowledge creator and translating it into practical strategies.

**Strategy:** It refers to developing modeled scenarios and applying them in the management.

**Organizational culture:** It refers to the different dimensions of culture including the creating, centralizing, sharing, and recognizing organizational culture as a key competence.

**Intellectual capital:** It includes recognizing the value of intellectual assets and codifying its tacit knowledge.

**Learning organization:** Under learning organization, organization should create continuous learning, define skills to create new knowledge, recognize EQ and its influences encourage creative thinking, and promote action learning both for individuals and teams.

**Leadership and management:** In leadership and management, organizations are required to have senior-management support, have knowledge leaders and managers with appropriate leadership styles, and develop strategies for promoting middle-managers.

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Teamwork and learning communities: Under teamwork and learning communities, organization should encourage learning communities and knowledge teams, establish trust, and recognize the need for intellectual autonomy.

Sharing knowledge: It signifies that organizations ought to collect, record major organization events, and share new information, and understand competitors' knowledge management system.

Knowledge creation: It requires the organizations to recognize new knowledge, those known as experts, and turn it into service.

Digital sophistication for the organization: In terms of digital sophistication, organizations are to develop technologies among its employees by clear technological architecture, enhancing its knowledge, and devising virtual collaborative systems and/or communities(pp.125-129).

Various studies have reported the consequences of effective knowledge management. For example, several studies found that good knowledge management practices could enhance organizational performance [16], and that knowledge management could create competitive advantages [1]. Other studies also indicated that effective application of knowledge management strategies has a significant relationship with variables such as innovation [13], change process [3], and productivity and effectiveness [23].

Social capital is considered a crucial and vital ingredient in the development of economic institutions [9], [19]. A vast variety of social processes, patterns and practices determine the social capital of a social unit, including social support, integration, social cohesion [14], team work, density of exchanges with colleagues [18], reduced probability of opportunism, cost of monitoring [18], encouraging cooperative behavior, facilitating the development of new forms of association and innovative organization [8]; [118] resolving disputes [10], taking advantage of new opportunities [11], and featuring the structure, not of the individual actors within the social structure; an ecologic characteristic. [15].

*The concepts of social capital seem to have been classified in to three different groups:*

*Cognitive dimension:*

The cognitive dimension of social capital refers to attributes like a mutual belief or shared paradigm that promotes a common understanding of collective goals and the proper ways of acting in the social environment [21]. The social capital's cognitive dimension may enable knowledge sharing in the sense that stories, shared language, customs and traditions can bridge the tacit-explicit division as well as division in terms of, for example, old-timers-newcomers (Hinds & Pfeffer, 2003). The cognitive dimension refers to those resources that provide shared representations, interpretations, and systems of meaning among parties. This includes shared language and codes as well as shared narratives, which increase the mutual understanding among individuals and help members communicate more effectively. [5].

*Structural dimension:*

The structural dimension of social capital focuses mainly on the density of networks and on bridging structural holes [4]. Structural social capital facilitates information sharing, and collective action and decision making through established roles, social networks and other social structures supplemented by rules, procedures and precedents. [22].

*Relational dimension:*

McDonald (2000) has tried to include a motivational element into the design of expertise recommender systems. He augmented an expert recommendation system with social networks. Therefore, the recommender system would suggest first those experts who had the closest social ties with the person asking.

The purpose of the present study was to provide a structural model for Knowledge Management in universities based on social capital .

## **MATERIALS AND METHODS**

*Research questions:*

1. What is the structural model for Knowledge Management in universities based on social capital ?
2. Which variables have the highest effectiveness on social capital?
3. How predictive is knowledge management on promoting social capital?

This study is applied since its purpose is the empirical determination of relationship between social capital and knowledge management readiness in the organization; and is descriptive-survey and correlative according to the data collection method. Furthermore, since the structural equation modeling approach is applied test the hypotheses, this study has the analysis of covariance or correlation matrix type among the correlative studies. . 600 employees were selected using simple random sampling method. The research instruments were two questionnaires which were administered in 32IAU branches and education centers: Nahapiet and Ghoshal(1998) , Social capital questionnaire which consisted of three structural dimensions (7 items), communication (7 items) and cognitive (6 items). and Cronbach Alpha of 0.84 ,and A questionnaire on the readiness for knowledge

management establishment: This questionnaire, which is designed by the researcher, has 5 dimensions of organizational culture (items), organizational structure (4 items), infrastructure (3 items), change support (4 items) and change content (3 items), with Cronbach Alpha of 0.85. The population under investigation in this study consists of official staff working in 32 branches and educational centers in 2 zone of Islamic Azad University. The statistical population of this study includes the managers and experts at Islamic Azad University of District 2. Therefore, the simple random sampling method is applied for measuring the sample size:

$$n = \frac{N \times Z \alpha^2 / 2 \times P(1 - P)}{\varepsilon^2 (N - 1) + Z \alpha^2 / 2 \times P(1 - P)}$$

Thus, 650 questionnaires are distributed for greater certainty and 600 questionnaires collected.

In this study, the inferential statistical methods such as Spearman correlation coefficient, Friedman analysis of variance, and structural equation modeling are applied for analyzing the data obtained from samples.

#### Results:

Results of sub-hypotheses test: These results are presented and analyzed in Table (1).

**Table 1:** The main results of sub-hypothesis test.

Hypothesis name	Correlation test			Structural equations modeling test		
	Correlation rate	Significance level	Result of hypothesis test	Standardized coefficient	t-value	Result
First: The relationship between the social capital and organizational culture	0.736	0.000	Hypothesis confirmed	0.96	15.23	Approval
Second: The relationship between the social capital and organizational structure factor	0.332	0.000	Hypothesis confirmed	0.7	5.8	Approval
Third: The relationship between the social capital and infrastructure factor	0.502	0.000	Hypothesis confirmed	0.69	10.78	Approval
Fourth: The relationship between the social capital and change support	0.463	0.000	Hypothesis confirmed	0.65	11.02	Approval
Fifth: The relationship between the social capital and change content factor	0.388	0.000	Hypothesis confirmed	0.73	3.84	Approval

The results of Spearman correlation test provide the evidence for significant and positive relationship between the social capital and knowledge management establishment variables such as the organizational culture, organizational structure, infrastructure, change support, and change content factors,

The results of structural equation modeling such as the standard coefficient, significant coefficient (t), and fitness parameters of model such as AGFI, GFI, RMSEA, and  $\chi^2$  all suggest that the social capital leads to the readiness for knowledge management establishment in five studied dimensions, namely, the organizational culture, organizational structure, etc, in studied population at confidence level of 99%.

Main hypothesis test: There is a significant relationship between the social capital and organizational readiness for knowledge management establishment.

A) Spearman correlation :Table (2) shows the results of Spearman correlation test between the social capital and readiness for knowledge management establishment.

**Table 2:** Results if Spearman Correlation Test between social capital and readiness for knowledge management establishment.

Correlations				
			SC	KM
Spearman's rho	SC	Correlation Coefficient	1.000	.694**
		Sig. (2-tailed)	.	.000
		N	600	600
	KM	Correlation Coefficient	.694**	1.000
		Sig. (2-tailed)	.000	.
		N	600	600

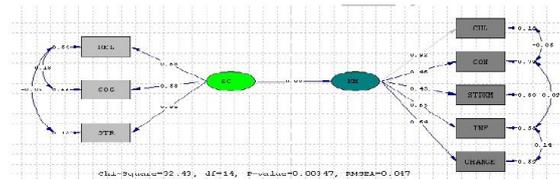
\*\* . Correlation is significant at the 0.01 level (2-tailed).

Based on SPSS output, Spearman correlation coefficient is equal to 0.694 between social capital and organizational readiness for knowledge management establishment and the observed significant number (sig) for this coefficient is smaller than 0.01 and in fact zero (sig < 0.01) which is lower than the standard significance

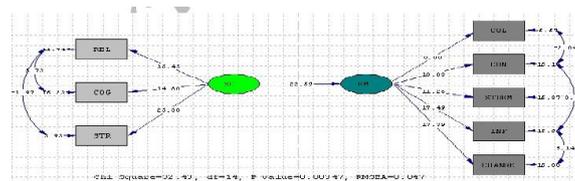
level ( $\alpha = 1\%$ ). Therefore, this coefficient is significant at confidence level of 99%. Since the correlation coefficient has a positive sign, it can be concluded that these two variables have co-directional and positive changes. In other words, the rise of social capital leads to the enhanced readiness for knowledge management (and vice versa). Now, as the existence of correlation coefficient is determined, the causal relationship between the social capital and readiness for knowledge management establishment can be measured by structural equation modeling.

B) Structural equation modeling :Figures 1 and 2 show the results of main hypothesis test (implementing model 1) by structural equation modeling approach. These figures represent the standard rate (R) and significant coefficient (T- value), the proposed causal relationship between social capital and readiness for knowledge management establishment.

Table 5 also shows R (standardized coefficient), t value and fit indices of model such as chi-square, RMSEA, GFI and so on.



**Fig. 1:** The test output of relationship between social capital and readiness for knowledge management establishment through LISREL software (standardized mode).



**Fig. 2:** The test output of relationship between social capital and readiness for knowledge management establishment through LISREL software (significance mode).

**Table 3:** Results of implementing the structural model between the social capital and readiness for knowledge management establishment.

Hypothesis	Independent variable	Dependent variable	R	T-value	Result
Main	Social capital	Readiness for knowledge management establishment	0.92	22.59	Approval

RMSEA = 0.047,  $df=14$ ,  $\chi^2 = 32.43$ , AGFI= 0.97, GFI = 0.99  
T value is significant at the confidence level of 99%.

As previously mentioned, if the value of  $\chi^2$  is low, the ratio of  $\chi^2$  to degree of freedom (df) smaller than 3, RMSEA (Root Mean Square Error of Approximation) smaller than 0.05, and also the GFI (Goodness of Fit Index) and AGFI (Adjusted Goodness of Fit Index) greater than 90%, it can be concluded that the implemented model has appropriate fit. The standard coefficient of existing equation will be also significant at the confidence level of 99% if the t value is larger or smaller than 2.

As shown, given the significant t value, the first hypothesis is confirmed at the confidence level of 99%. And then, the appropriate validation and fitting of model are confirmed because the chi-square value, RMSEA, and ratio of Chi-square to degree of freedom are less than 90 percent and the values of GFI and AGFI above 90 percent.

Therefore, H0 is unconfirmed and H1 or the main hypothesis confirmed. Thus, it can be argued that the social capital in desired population leads to the readiness for knowledge management establishment at the confidence level of 99%.

Ranking test based on Friedman's analysis of variance:Friedman test is applied for ranking each factor associated with the readiness of knowledge management establishment (including the organizational culture, organizational structure, infrastructure, change support and change content).

Hypothesis test: There is a significant difference between the current statuses of 5 factors in readiness for knowledge management establishment.

The output results of SPSS are presented in tables 4 and 5. In the first table, the mean rank of each variable is presented and the second table presents the statistical characteristics and  $\chi^2$  statistics. Given the SPSS output, the significant number (sig) is equal to zero and is less than the standard significance levels of 1% and

5%. Thus, H<sub>0</sub> is rejected at the confidence level of 99%. It can be concluded that the factors associated with readiness for knowledge management establishment have no equal ranks.

**Table 4:** Mean ranks in Friedman test for investigating the factors associated with the readiness of knowledge management establishment.

No.	Variable	Average Rating	Priority	Degrees of freedom	Sig
1	Organizational culture	2.76	Change content	4	0.000
2	Organizational Structure	2.35	Organizational Infrastructure		
3	Organizational Infrastructure	2.59	Organizational Culture		
4	Change content	4.29	Change support		
5	Change support	2.54	Organizational Structure		

**Table 5:** Significance of Friedman test.

Statistical indexes	Calculated values
Total	600
$\chi^2$	737.394
Degree of freedom	4
Significance value (sig)	0.000

#### Discussion And Conclusion:

the results of field study indicate that there is a significant relationship between the social capital in three cognitive, structural and communication dimensions with the variables of readiness for knowledge management establishment such as the organizational culture, organizational structure, infrastructure, change support and content. Furthermore, the research results indicate that the social capital leads to the readiness for knowledge management establishment in five mentioned dimensions in studied population.

The results of Friedman ANOVA test indicate that there is a significant difference between the current states of five factors in readiness for knowledge management establishment; in other words, they have no equal ranks, so that its maximum rank belongs to the change content and the minimum one to the organizational structure.

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